Decision Support Systems for the Efficiency Social Networks of Small and Medium Enterprises

Victor E. Rivera-Castroa\*, Angel Ojeda-Castrob, Juan Valerac

*a,b,c,School of Business and Entrepreneurship, Universidad del Turabo, Puerto Rico*

*aEmail: vrivera159@email.suagm.edu,*

*bEmail:* [*ut\_aojeda@suagm.edu*](mailto:ut_aojeda@suagm.edu)*,*

*cEmail: valeraj1@suagm.edu*

**Abstract**

The objective of this literature review article was to develop a framework of reference for the use of social networks as a decision support systems tool for the efficiency of small and medium enterprises. Twenty (20) research articles were reviewed from 2011 to 2017 that were associated with the topics of decision support systems, strategic decisions, and social networks. The research findings suggest that the use of decision support systems help the organization gain a competitive advantage, improve performance by analyzing the data obtained, and the data extracted from social networks add value to the company with low investment. Social networks have transformed the availability of information for their customers, making available a set of tools for searching, debugging, and validating data from both: individuals and organizations [19]. The use of social media is an effective modality for the development of relationships with clients and employees [10].

***Keywords:*** Decision Support Systems, Social Networks, Strategic Decisions, Small and Medium Enterprises

1. Introduction

Small and Medium Enterprises have multiple challenges when making decisions [3]. In the last decade, it has become common for managers to have methods for problem analysis; however, when the problem is associated with information technologies, these methods tends to be different, so it becomes a challenge [14]. Generally, small and medium enterprises do not have an information technology strategy due to the little planning of goals and uncertainty that constantly surround these types of companies [3]. In social networks, millions of consumers interact directly with the product offered by companies and effective management represents an increase in sales, and consequently a better chance of success [7]. Low visits from consumers or potential clients to the websites of small organizations, as well as the relative high cost associated with their maintenance has led to the small organizations prefer social networks to promote their presence in a digital environment [12]. While social networks add value to businesses, they also add many challenges. [17]. Generally, managers or representatives of these companies do not have enough knowledge to adopt new information technology strategies [17].

**2. Literature Review**

***2.1 Decision Support System***

A decision support system is an information system used to support decision making in an organization or a business [6]. The benefits of the decision support system include providing a mechanism to make more informed decisions, timely resolutions, and greater efficiency in addressing issues in balance with the organizational and social approach [6]. Due to the easy handling, data collection and analysis, it allows the end user to make more informed decisions at a faster rate [11]. The decision support system is used by middle to upper management and is key to understanding large amounts of data over a period of time [5]. The information obtained from the system can be presented to the client in a visual way for easy understanding and customized use for each case. Therefore, decision support systems have become a tool of indispensable use in any organization. These systems help to strengthen the decision-making process and facilitate the visualization of the most important data [11].

***2.2 Social Networks***

Social networks are a set of virtual sites dedicated to entry, interaction, content sharing, and collaboration [10]. These spaces have become an integral part of online life as websites and social applications proliferate most commercial enterprises [7]. Companies use these means to market products, promote brands, connect with customers, and foster new business [9]. Social networks facilitate the communication between the client and the company, which helps to create loyalty to the brand, and improve the impressions that their clients have of the company [10]. Social networks allow the business to respond very quickly to positive and negative feedback from customers, address problems affecting the business image, and maintain, recover, build, or rebuild customer trust [8]. Business representatives can apply different strategies for the use of social networks, such as content development and sending messages, which will allow sharing this information with family and friends [9]. On the other hand, the use of social networks as an entrepreneurial tool can provide both advantages and disadvantages, which requires companies to have an active strategy of social networks [13].

***2.3 Strategic Decisions***

Strategic decision making describes the process of creating missions and organizational goals, as well as deciding what course of action a company should follow [16]. Strategic decision making is an ongoing process that involves the creation of strategies for achieving goals, and strategies based on observed results [15]. After the goals and strategies, the next stage requires managers to collect data and evaluate the strategic results for the purpose of applying them to business needs [3]. While small business entrepreneurs are experts in the industry they lead, they are often not experts in business management [15]. Business owners request outside help to assist in the strategic decision-making process; other firms hire professional consultants to help them make decisions in order to achieve their goals [16].

**3. Methodology**

A critical analysis was performed using twenty (20) articles published from journals of information systems from the years 2011 to 2017. The documents analyzed and examined present an approach to the themes of Decision Support Systems, Strategic Decisions, and Social Networks. The critical analysis of the articles reviewed is illustrated in Table 1. These articles were reviewed and their main contributions were summarized accordingly.

**Table 3.1 Contribution of Revised Articles**

|  |  |  |
| --- | --- | --- |
| **Year** | **Article** | **Contribution** |
| 2012 | Annis, K. “Social Media for the Small Firm: How Social Media Resources Are Leveling the Legal Marketing Playing Field Strategies.” The Journal of Legal Marketing 14(6), 9-12 | The implementation of any technology involves organizational support. |
| 2014 | Filip, F. G., Suduc, A. M., & Bizoi, M. “DSS in numbers.” Technological and Economic Development of Economy, 20(1), 154-164, 2014. | Materials published on the SSD have been exponentially increased. |
| 2012 | Modeling dynamics in decision support systems. (Riedel, R., Wiers, V., & Fransoo, J. C. (2012). | The implementation of technological processes has become more challenging in the last decade. |
| 2013 | Gao, S. “Mobile decision support systems research: a literature analysis.” Journal of Decision Systems, 22(1), 10-27, 2013. | The balance of decision support approaches also echoes the growing organizational and social focus of research in the field of IT. |
| 2013 | Nobari, S. M., & Zadeh, D. H. “Designing a fuzzy model for decision support systems in the selection and recruitment process.” African Journal of Business Management, 7(16), 1486, 2013. | There is a lack in the system that has the capacity to integrate the needs of organizations. |
| 2014 | Schaupp, L. C., & Bélanger, F. “The value of social media for small businesses.” Journal of Information Systems, 28(1), 187-207, 2013 | Small businesses are able to gain substantial value from social networking, but there are also many challenges. |
| 2011 | Mortara, A., & Sinisi, V. “Building corporate reputation trough social media: the case of Tommee Tippee”, Italy. In Convegno Annuale di Sinergie Governance d'impresa e comunicazione strategica", 2011. | The use of social media is an effective way to stay ahead of the public and continue to develop deeper relationships. |
| 2012 | Jefferson III, C. E., & Traughber, S. “Social Media in Business. How Social Media Can Help Small Businesses and Non-Profit Organizations.”, 2-3, 2012. | Most people indicate that Facebook is their core network. |
| 2012 | Annis, K. “Social Media for the Small Firm: How Social Media Resources Are Leveling the Legal Marketing Playing Field Strategies.” The Journal of Legal Marketing 14(6), 9-12, 2012. | Creating content and messages around a central theme is key to attracting a social networking audience. |
| 2013 | Durkin, M., McGowan, P., & McKeown, N. “Exploring social media adoption in small to medium-sized enterprises in Ireland.” Journal of Small Business and Enterprise Development, 20(4), 716-734, 2013. | The accelerated growth, deployment, and integration of new technologies bring questions regarding the quality of interactions. |
| 2014 | Taneja, S., & Toombs, L. “Putting a face on small businesses: Visibility, viability, and sustainability the impact of social media on small business marketing.” Academy of Marketing Studies Journal, 18(1), 249, 2014 | Social networks have changed the delivery, structure, and availability of information to reach current and future customers. |
| 2014 | Carrière, J. “HR Involvement in Strategic Decisions: Impact on Organizational Performance.” Journal of Strategic Human Resource Management, 3(1), 2014. | Managers who are fully involved in strategic planning will be in a better position to suggest and adapt the practices to the needs of the organization. |
| 2016 | Sajjad H. & Francesca M. "Unfolding critical events and strategic decisions: the role of spatial and temporal cognition" Management Decision, Vol. 54 Issue: 7, 1813-1842, 2016. | A variety of terms and tools have been used such as mental models, schemes, dominant logic, cognitive maps, frameworks, and belief systems to understand decision making. |
| 2012 | Sabău, L. I. “Information and strategic decisions in economic entities management.” OF THE UNIVERSITY OF PETROŞANI~ ECONOMICS~, 227, 2012. | The information represents support for decision making, helping them make the right decision to achieve the stated goals. |
| 2012 | Ulrich R. Orth, Frauke Heinrich, Keven Malkewitz. "Servicescape interior design and consumers' personality impressions." Journal of Services Marketing, Vol. 26 Issue: 3, 194-203, 2012. | Consumers prefer environments that match their concept of themselves. |
| 2013 | Ordabayeva, N., & Chandon, P. “Predicting and managing consumers' package size impressions.” Journal of Marketing, 77(5), 123-137, 2013 | It is important for managers and owners to predict changes in the company without the need for large empirical estimates. |
| 2012 | Keller, E., & Fay, B. “Word-of-Mouth Advocacy.” Journal of Advertising Research, 52(4), 459-464, 2012. | Seventy-five percent of all brand consumer conversations happen face-to-face, and another fifteen percent goes on the telephone, and only about ten percent online. |
| 2012 | Schuldt, J. P., Konrath, S. H. and Schwarz, N. “The Right Angle: Visual Portrayal of Products Affects Observers’ Impressions of Owners. Psychol. Mark., 29: 705–711, 2012. | The choice of products by consumers reflects an expression of identity and management of printing in the company. |
| 2015 | Palmeira, M., & Spassova, G. “Consumer reactions to professionals who use decision aids.” European Journal of Marketing, 49(3), 302-326, 2015 | Negative attitudes toward decision aids make people doubt the experience and competence of company professionals. |
| 2014 | Jia, J., Shiv, B., & Rao, S. “The Product-Agnosia Effect: How More Visual Impressions Affect Product Distinctiveness in Comparative Choice.” Journal of Consumer Research, 41(2), 342-360, 2014. | Consumer choice is often based on the visual appeal of competing products. |

**4. Limitations**

The study includes only 30% of article analysis on topics related to social media, 35% on issues related to consumer behavior and 35% on issues related to DSS and Strategic Decisions. The researchers did not include other significant references related to social media for analysis and findings, before 2011. The research does not suggest a conceptual model that includes constructs related to social media as a method of information resources for small and medium enterprises. The results of this investigation cannot be generalized for small and medium companies of any jurisdiction in the world.

**5. Conclusions**

The results indicate that there is a link between strategic business decisions and the use of decision support systems through social networks in small and medium business. This analysis suggests that using decision support systems in the day-to-day business would help to gain competitive advantage and improve performance by analyzing the data obtained. An analysis of the data extracted from social networks add value to the company with a little investment. Best practices suggest that the organizational benefits gained to improve the consumer experience and increase the performance of business resources. Schemas, logic, and cognitive maps are critical to understanding decision making [16]. An active manager in organizational planning is best placed to apply the best decision-making practices to meet business needs [2]. Ten percent (10%) of consumer opinions or conversations occur online [9]. Social networks have transformed the availability of information for their clients [19]. The use of social media is an effective modality for the development of relationships with clients and employees [10].

**6. Recommendations**

Expand the research with the analysis and results of other significant studies on the topic of social networks. Develop a conceptual model, with the inclusion of variables or constructs, which allows to measure the possible relationships to the phenomenon of social networks as computer resources for small and medium enterprises. Perform an empirical study to measure each of the possible relationships involved in the use and benefits of social networks in small and medium enterprises.

**References**

[1] Annis, K. “Social Media for the Small Firm: How Social Media Resources Are Leveling the Legal Marketing Playing Field Strategies.” The Journal of Legal Marketing 14(6), 9-12, 2012.

[2] Carrière, J. “HR Involvement in Strategic Decisions: Impact on Organizational Performance.” Journal of Strategic Human Resource Management, 3(1), 2014.

[3] Dowding, D. “Using computerised decision-support systems.” Nursing times, 109(36), 23-25, 2012.

[4] Durkin, M., McGowan, P., & McKeown, N. “Exploring social media adoption in small to medium-sized enterprises in Ireland.” Journal of Small Business and Enterprise Development, 20(4), 716-734, 2013.

[5] Filip, F. G., Suduc, A. M., & Bizoi, M. “DSS in numbers.” Technological and Economic Development of Economy, 20(1), 154-164, 2014.

[6] Gao, S. “Mobile decision support systems research: a literature analysis.” Journal of Decision Systems, 22(1), 10-27, 2013.

[7] Jefferson III, C. E., & Traughber, S. “Social Media in Business. How Social Media Can Help Small Businesses and Non-Profit Organizations.”, 2-3, 2012.

[8] Jia, J., Shiv, B., & Rao, S. “The Product-Agnosia Effect: How More Visual Impressions Affect Product Distinctiveness in Comparative Choice.” Journal of Consumer Research, 41(2), 342-360, 2014.

[9] Keller, E., & Fay, B. “Word-of-Mouth Advocacy.” Journal of Advertising Research, 52(4), 459-464, 2012.

[10] Mortara, A., & Sinisi, V. “Building corporate reputation trough social media: the case of Tommee Tippee”, Italy. In Convegno Annuale di Sinergie Governance d'impresa e comunicazione strategica", 2011.

[11] Nobari, S. M., & Zadeh, D. H. “Designing a fuzzy model for decision support systems in the selection and recruitment process.” African Journal of Business Management, 7(16), 1486, 2013.

[12] Ordabayeva, N., & Chandon, P. “Predicting and managing consumers' package size impressions.” Journal of Marketing, 77(5), 123-137, 2013

[13] Palmeira, M., & Spassova, G. “Consumer reactions to professionals who use decision aids.” European Journal of Marketing, 49(3), 302-326, 2015

[14] Riedel, R., Wiers, V., & Fransoo, J. C. “Modelling dynamics in decision support systems.” Behaviour & Information Technology, 31(9), 927-941, 2012

[15] Sabău, L. I. “Information and strategic decisions in economic entities management.” OF THE UNIVERSITY OF PETROŞANI~ ECONOMICS~, 227, 2012.

[16] Sajjad H. & Francesca M. "Unfolding critical events and strategic decisions: the role of spatial and temporal cognition" Management Decision, Vol. 54 Issue: 7, 1813-1842, 2016.

[17] Schaupp, L. C., & Bélanger, F. “The value of social media for small businesses.” Journal of Information Systems, 28(1), 187-207, 2013

[18] Schuldt, J. P., Konrath, S. H. and Schwarz, N. “The Right Angle: Visual Portrayal of Products Affects Observers’ Impressions of Owners. Psychol. Mark., 29: 705–711, 2012.

[19] Taneja, S., & Toombs, L. “Putting a face on small businesses: Visibility, viability, and sustainability the impact of social media on small business marketing.” Academy of Marketing Studies Journal, 18(1), 249, 2014

[20] Ulrich R. Orth, Frauke Heinrich, Keven Malkewitz. "Servicescape interior design and consumers' personality impressions." Journal of Services Marketing, Vol. 26 Issue: 3, 194-203, 2012.

**First author**

Victor E. Rivera-Castro is currently pursuing doctoral degree program in the School of Business and Entrepreneurship in Information System at the University of Turabo in Puerto Rico (USA). Rivera-Castro has more than ten years of experience in the technology industry and currently works as a programmer in the insurance industry in Puerto Rico.

**Second author**

Dr. Angel Ojeda-Castro is an Associated Professor of Information Systems at the School of Business and Entrepreneurship of Universidad del Turabo in Puerto Rico. Dr. Ojeda-Castro has published articles in peer-reviewed journals on the topics of: Artificial Intelligence, Big Data, Data Warehouse, Decision Support System, Internet of Things, Learning Management System, Machine Learning, Mobile Technology, Online Human Resources, Open Source Technologies and Social Media. In addition, Dr. Ojeda-Castro has participated as a speaker in international conferences in the Dominican Republic, Puerto Rico, and USA.

**Third author**

Dr. Juan Valera is an Auxiliar Professor of Information Systems at the School of Business and Entrepreneurship of Universidad del Turabo in Puerto Rico. Dr. Valera has published articles in peer-reviewed journals on the topics of: Signal Processing, Acoustic Channels, Deblurring imaging, and Computational Frameworks. In addition, Dr. Valera has participated as a speaker in international conferences in the USA, Puerto Rico, and México. He obtained his Ph.D. in Computer and Information Sciences at University of Puerto Rico.